FAMILY LYCEUM.

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FAMILY LYCEUM.

JOSIAH HOLBROOK, EDITOR.

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REPORT OF THE

INFANT SCHOOL SOCIETY.

To the Managers of the BOSTON INFANT SCHOOL SOCIETY, the Committee of Arrangements for their Infant School beg leave to report:—

THAT they put the School into operation on the 4th of June last, agreeably to the directions of the Board; and have exercised a general supervision over it, as far as circumstances would permit. They have occasion to regret, that the frequent absences of two of their number from the city, and the numerous engagements of them all, have limited their attention to its interests far below their wishes and expectations.

The instruction and government of the School were committed to Misses Carr and McGinnis, who still remain. The Committee are gratified in being able to bear unequivocal testimony to the ability, fidelity, and perseverance of both these ladies. They have not only been assiduous in the duties of the school-room, but have sought out children in the habitations of poverty, and brought them in the arms of kindness to the place of instruction. Their visits to pupils and their parents have been frequent; and their intercourse with both classes, so far as your Committee can ascertain, has been of a very salutary character. Miss Carr, as superintendant or principal teacher, has given full proof of her superior qualifications for the office; and the Committee have only to regret, that convictions of duty to herself and her distant friends will induce her to leave this important station at the end of the first year. She will not, however, retire, unless some lady can be found who is able to carry forward the work which she has so auspiciously commenced.

The Committee were unable to procure a convenient room for the school, for several months after its commencement. It occupied two rooms successively, and was once necessarily interrupted for several weeks for want of accommodation. This circumstance has added considerably to the expenses, and to the labors of the Committee; while it has materially retarded the progress of the pupils. At length, a very pleasant and convenient room has been procured, under the Mariners' Chapel in Purchase-street, which is in the vicinity of all the scholars, and of easy access to visiters. It is expected that this room may be retained permanently, and thus prevent the recurrence of similar obstacles.

Very little effort has been made to invite *public* attention to this school. Its directors and teachers have preferred to collect pupils by private efforts, and to make a thorough experiment of the efficacy of this mode of instruction upon a most unpromising class of children, in a silent way. The Committee believe that the success of the experiment is decidedly good; and that the Managers might now make their plan and operations more extensively known, with every prospect of meeting public approbation and patronage. The Managers are aware, that subscriptions to their funds among their friends were quite liberal, before the school commenced, when their object alone could be presented, and the feasibility of their plan was doubtful. A second appeal before the end of the year has been made in the same manner, and with flattering success. Thus far the expenses have been paid in this manner; and no doubt can remain, that when the fruits of our labors are more generally known, the public will sustain the present school, and enable the Managers to establish as many as may be needed for the neglected and forsaken children of the poor and ignorant. When winter weather commenced suddenly, and half the pupils were immediately detained from school for want of sufficient clothing, a short paragraph was addressed 'to benevolent ladies' in the public papers; the consequences of which were, a prompt supply of their necessities, and the commencement of visits to the school by many ladies which are yet continued, and which, there is reason to believe, have been very satisfactory to them and useful to the school. The Committee would take the liberty to invite the renewed attention of the Board to a plan which has several times been discussed; a plan for inviting the active and systematic efforts of benevolent ladies in effecting the objects of the Society. Some have already volunteered their services—and, as one result of them, forty or fifty names of children in Ann-street and its vicinity are already enrolled, who are ready to enter a school if it should be opened in that section of the city.

A spectator might spend a day in our school, and not be strongly impressed with its progress or utility. He would estimate its worth and efficiency, only by knowing what the children were at the time of their entrance, and from what places and what associations they came. If he could be apprised of their true character and condition, especially if he could have seen with his own eyes the hole or the pit whence they were digged, he would not fail to admire the progress which has been made toward their becoming polished stones. They are not now far advanced in knowledge; but they are taken up out of the streets, and placed for a great portion of their time under a happy moral influence, and the effect upon their tempers and habits is manifestly great and happy.

As the best account the Committee can give of the present state and prospects of the school, they will here present a few extracts from the report of the Principal Teacher.

'The total number of children received has been 130; of whom 31 were transient scholars, and 99 more permanent. Of the 99, 40 have been taught the alphabet at least. 80 are now on the roll; of whom 30 have been received since December. 6 have been removed of choice to other schools. 10 of the whole number had attended other schools previous to their entrance here; but none knew their letters, and we have scarcely found a parent who can read. Nearly all used profane and indecent language in their common discourse; but violence and rudeness marked their conduct, rather than falsehood and deceit, the entire want of discipline at home rendering the concealment of a fault unnecessary. It is a remarkable fact, that although they are surrounded by temptations, an instance of theft has never to our knowledge occurred among them. In the experience of five years, during which we have mingled with six hundred children of all grades in society, we have never met with honesty so scrupulous; and we are unable to account for the fact.

'After the most diligent inquiry, we have found but one who had any knowledge of the Supreme Being, or of moral responsibility. We believe that most of them are now delighted to claim an affinity with the Father of the universe, and try to bring their conduct into obedience to his laws.

'They were excessively filthy when they entered the school, and a large number were covered with vermin and disease. A total change has taken place in these respects, in all who have attended any considerable time.

'Of our present state we can only say, that seven classes are engaged in spelling; embracing all the older children who have been in school the requisite time; all of whom are taught to form arithmetical figures on slates preparatory to cyphering; also, geometrical figures. In the last they exert much skill, and seem particularly to enjoy the exercise.

'In all the branches taught, we have arrived rather at that stage when curiosity is excited, than that when information is gained; as their extreme ignorance warned us to proceed very slowly, lest we should only injure, when we intended to improve. Many, many months saw us only breaking up the ground and destroying the weeds.'

The Principal subjoins a number of facts, which are calculated to show the degraded condition of the children, and the moral influence of the School; of which the following are extracted from the Report:

'I. M. was brought to us at our commencement, convulsed with rage; blows and kicks were freely dispensed to teachers and schoolmates, and for weeks we almost despaired of making any alteration in his savage propensities. But the mollifying influence of gentleness and affection have had their effect, and at school or home he has become a gentle docile boy.

'E. C. a fine girl of five years, was brought to us in a similar situation. "Sure, ma'am," said the mother, while she exhibited her bruised person, "it is not for want of '*bating*' she's so bad." Her remark suggested the mode of treatment, and from that hour a look has governed her, and a more gentle amiable child we never had the happiness of meeting.

'I. C. aged four years, was introduced by his father with "this is a bad boy, ma'am, and I'll give you two dollars a week if you'll take care of him." We found his worst fault to be a propensity for knocking his opponents down; and the bruised faces in school for many weeks gave testimony to the strength of his arm. He possesses a fund of humor beyond his years; in reply to the question, what God had made his finger-joints for, he closed his fist and said, "to hit a *nager* wid!" His noble qualities have been brought out, and he is now one of the charms of our little family; tender-hearted and affectionate, he is the friend of all the distressed little ones; none so ready to share, none so ready to sooth.

'P. G. we found a few months ago, in a state of semi-nudity, and perfectly wild in appearance and manners. He is now the foremost in knowlege, and his course must be onward. Nothing is an impediment to his attendance; sickness or storms detain him not; but all this talent is accompanied by a corresponding violence of temper that makes us tremble for the future.

'J. & H. M. the first six years, and the last twenty months old, are the children of an intemperate mother, who, on our remonstrating with her on her habits, assured us that she gave liquor to these children that they might be inured to it early! And that the youngest would not take it unless *forced* to do so! The next day, on speaking to the children on this to them intensely interesting subject, the boy said, "Miss C—, I don't drink rum! When my father gives it me, I only puts my tongue in it, and sets the tumbler on the table! I only makes believe drink it."

'M. F. is a lovely little girl, whose friendless appearance attracted our attention.—After repeated visits to her home, which we found constantly locked, we succeeded in seeing her mother, a catholic, who had many natural fears which we removed. She said she was forced to leave her home early in the morning, and to lock her poor child out, committing her to the mercy of Heaven. Now she labors with a grateful heart.

'E. B. came to us a month ago, covered with vermin, and the picture of all miserable passions; but love and kindness are humanizing the heart of this neglected child, and she can scarcely be forced to her home, where none await ever for her food; she invariably remains with us until the school is closed for the night.'

JOSIAH HOLBROOK, ASA RAND, } *Committee of Arrangements.*

REPORT OF THE

MASS. LYCEUM.

ANOTHER subject assigned for this meeting will prevent a report of the progress of the Lyceum cause during the last year. It may be observed, however, that it has been much greater than in any former year. In most instances, those Lyceums at first established have become more thorough and more systematic in their character, and of course more successful in their operations. A knowledge of the general system has extended itself over the whole country, and flourishing Lyceums are now in operation in all the states in the Union. It is found by experience to be peculiarly fitted to new or thinly settled countries, and has hence made rapid progress at the West and South since its principles and operations have been understood.—Highly interesting and prosperous Lyceums have been established and sustained, where it is impossible to sustain schools for daily instruction.

Nor is this system confined to our own country. It has already gone into successful operation in Mexico, South America, some of the West India Islands, in Scotland, England, and France; and bids fair to present a common ground on which all the friends of Education and of humanity throughout the civilized and civilizing world can meet, and cooperate with each other in the glorious cause of enlightening an ignorant world, of reforming a corrupt world, and elevating a fallen world.

There is another kind of extension than that of space which the Lyceum interest and operations have taken during the last year, which is peculiarly satisfactory and animating. While on the one hand this cause has spread over our whole Union, and found its way into other countries and other continents, on the other, it has been welcomed into schools, social circles, and families, where its results are still more happy and cheering than in the larger and more formal institutions.

The formation of School Lyceums during the last year, which in great numbers are producing the most unexpected and truly animating results, may be considered as almost forming a new era in the history of the institution, and of education. These voluntary associations connected with schools, have not only done much to awaken interest and invigorate effort in the business of improvement among the members, but they have commenced a system of cooperation among Lyceums and schools in distant parts of the country. Both the Lyceums and the schools of Massachusetts are cooperating, by way of exchanges, with similar institutions in New York and Georgia, and some of the states at the south. A course of exchanges has, for some months past, been carried on between a Female Seminary in the vicinity of Boston and one in Savannah, Geo.; and it has not yet been discovered that either has adopted or cherished any principle of nullification.

Some school Lyceums have been organized for the specific object of doing good—for calling into exercise, for enlarging, for educating their moral faculties. This they do by hearing or giving lectures on ethics or moral philosophy. For as they believe that lectures on gymnastics will do much less to enlarge and strengthen the muscles of a blacksmith's arm than vigorously plying the hammer, so they believe the moral powers are much less enlarged and ennobled by hearing lectures, or by saying 'Be ye warmed and filled,' than by doing things that are needful. Indeed they believe that neither the physical nor the intellectual powers, especially of children, can be enlarged and strengthened with any thing near the rapidity or the success as the moral faculties. Nor can it be doubted for a moment, that all our faculties must be cultivated and educated by the same means—by exercise.

When it is known and generally acknowledged that moral character constitutes the highest dignity, the only real excellence either in man or his Creator, and that intellect, unguided and unrestrained by moral power, that abused intellect, produces much the greatest part of the mischief and the misery in the world, even a faint prospect that those principles which alone can form the corner or foundation stone on which any valuable superstructure can be erected by the hand of Education, must be truly animating to every philanthropist and every christian.

The occasion will not permit our enlarging upon this truly fertile and animating topic, nor to speak of this or other principles of the Lyceum system as they are now applied in schools, in families, or among farmers and mechanics, or other producing classes. Nor can we detail or even mention the great success or the happy results of apprentices' Lyceums, some of which have set an example worthy of being followed, even by those under the dignity of grey hairs and the wisdom gained by the experience of three score years.

In the few remaining remarks we have to make, we can merely advert to the specific object of this meeting. It is to present one or two subjects recommended by the National Lyceum for general cooperation among the friends of education in all parts of the Union. One of these objects thus recommended is collecting cabinets of Natural History for the use of Lyceums, schools, and families throughout our country, and by these collections to institute a system of exchanges not only between all parts of our own country, but with other countries—with Europe, Asia, Africa, and the islands of the sea.

Another object recommended by the National Lyceum for general cooperation among state, county, and town Lyceums, is the procuring of town and county maps.

As these two objets have already made some progress in this Commonwealth, they are particularly appropriate as subjects of attention, by the Massachusetts Lyceum.

With these general and brief statements

and views, the attention of the meeting is cheerfully resigned to others who may be disposed to present resolutions, and who are able to do more ample justice to this great subject.

PASSIONS AND AFFECTIONS.

Affections are modifications of pleasure and pain, arising from the perception of natural good or evil, according to the circumstances in which they occur to the notice of the mind.

They are sometimes called *passions*, as opposed to actions; the latter being perfectly voluntary, the former not being immediately dependent on the will.

Dr. Cogan makes a curious, and, perhaps, a just distinction between passion, emotion, and affection. Passion is the first feeling of which the mind is conscious, from some impulsive cause by which it is wholly acted upon, without any efforts of its own, either to solicit or to escape the impression. *Emotions* are the sensible effects produced by the impetus of the passion upon the corporeal system. *Affections* signify the less violent, more deliberate, and more permanent impressions, whether pleasing or painful, whether of a benevolent or malevolent character.

The primary, or general passions, according to Dr. Hartley's distribution of them, are ten; five grateful, and five ungrateful.

Of the five grateful passions, the first is *love*, which arises from the contemplation of good in the abstract.—2. *Desire*, which is love excited so as to put us upon action.—3. *Hope*, which arises from the probability of attaining absent good.—4. *Joy*, from the possession of the present good.—And 5, *Pleasing recollection*, which takes place when the object is withdrawn, and keeps up love to it.

The five ungrateful primary passions corresponding with the five grateful ones, and excited by the perception of evil in similar circumstances, are *hatred*, *aversion*, that is, active hatred, *fear*, *grief* and *displeasing recollection*.

The affections are arranged by Dr. Hartley, under six general classes, viz. imagination, ambition, self-interest, sympathy, theopathy, and the moral sense.

First, the pleasures and pains of imagination: these arise from the perception of natural or artificial beauty or deformity, and are distinguished into seven kinds:—1. Those pleasures which arise from the beauty of the natural world.—2. From the works of art.—3. From the liberal arts of music, painting, and poetry.—4. From the sciences.—5. From beauty of person.—6. From wit and humor.—7. The pains which arise from gross absurdity, inconsistency, or deformity.

Secondly, the pleasures and pains of ambition, which arise from the opinions of others concerning us; the sense of honor and of shame. These respect, 1. External advantages or disadvantages; the principal of these are fine clothes, riches, titles, and high birth; with their opposites, rags, poverty, obscurity, and low birth.—2. Bodily perfections and imperfections; these are beauty, strength and health; or deformity, imbecility, and disease.—3. Intellectual accomplishments and defects; these are sagacity, memory, invention, wit, learning; and their opposites, folly, dulness, and ignorance.—4. Virtue and vice; namely, piety, benevolence, courage, temperance, chastity, humility; and the vices contrary to these.

Thirdly, The pleasures and pains of self-interest; arising from the possession or want of the means of happiness; and security from, or subjection to, the hazards of misery. Self-interest is of three kinds.—1. Gross self-interest, or the cool pursuit of the means whereby the pleasures of sensation, imagination, and ambition, are to be attained, and their pains avoided; of this the chief species is the love of money.—2. Refined self-interest, or the deliberate pursuit of the means that relate to the pleasures and pains of sympathy, theopathy, and the moral sense; when religion, virtue, and benevolence, are practised with an explicit view to our own happiness.—3. Rational self-interest, or the pursuit of the greatest possible happiness, without any possible partiality to this or that kind of happiness, means of happiness, &c. This is the same thing with the abstract desire of happiness and aversion to misery, which is not, however, a universal affection, though commonly believed to be such. The hopes and fears relating to a future state, or to death, are of this kind.

Fourthly, the pleasures and pains of sympathy, that is, those which arise from the pleasures and pains of our fellow creatures. Of these there are four classes:

1. Those by which we rejoice at the happiness of others; these are sociality, benevolence, generosity, gratitude.—Sociality is the pleasure we take in the company and conversation of others, and particularly of our friends and acquaintance, and is attended with affability, complaisance, and candor. In children, it is generated by the preponderance of pleasure which they receive from, or in company with, others, and the same cause generally operates to produce the same effect through life. Benevolence is that pleasing affection which engages us to promote the welfare of others to the best of our powers. It rises from sources similar to sociality, and it is cherished by the high degree of esteem annexed to it, and the advantages it procures. Generosity is an affection which disposes us to forego great pleasures, or to endure great pains, for the benefit of others; it is benevolence in a high degree.—Gratitude is benevolence exercised towards a benefactor.

2. Those by which we grieve for the misery of others: these are compassion and mercy. Compassion is the uneasiness which a man feels at the misery of another. It is generated in children by those expressions of pain in others which excite similar feelings in themselves; by the pains taken to excite the sympathy of children when parents, attendants and others, are suffering; by the restraints they often undergo from the uneasiness and pains of others; and in adults, it is confirmed by irritability of nerves, by great similar trials and afflictions, by benevolence to suffering friends, by the esteem and praise annexed to it, and the like. Mercy is compassion exercised to an object that has forfeited his title to the continuance of happiness, or to the removal of misery, by some demerit, particularly against ourselves.

3. Those by which we rejoice at the misery of others; these are moroseness, anger, revenge, jealousy, cruelty, and malice. Moroseness, peevishness, and severity, arise from whatever makes disagreeable impressions upon the mind, while our fellow-creatures, or their ideas, are present with us. Anger is a sudden start of passion, by which men wish and endeavor harm to others. Revenge rejoices in it when done. Anger is generated by the desire to prevent harm to ourselves, which leads us to threaten it to others, to desire their harm, and so to inflict it; but in proportion as a correct moral sense gains its due influence over us, anger is restricted to voluntary agents who intentionally injure us, and proportioned to the degree of injury received. Malice deliberately wishes the misery of others. Cruelty delights in the view and infliction of it, without the consideration of injury received. These are habits of mind. They originate in anger indulged and gratified, and are most apt to rise in the minds of the proud, the selfish, and the timorous. Jealousy arises from the suspicion of a rival in the affections of a person of the other sex. It is a species of anger.

4. Those affections by which we grieve for the happiness of others, are emulation and envy. These arise from the eager desire of riches, honor, power, &c. which leads us to think, that our happiness is diminished by what others enjoy.

5. The pleasures and pains of theopathy, or those which arise from the contemplation of God, of his attributes, and of our relation to him. These are love and fear. Love is associated with gratitude, confidence, and resignation. It is produced by the contemplation of divine bounty and benignity; and it is supported and increased by the consciousness of upright intentions, the hope of future reward, by prayer, conversation, and contemplation. The love of God rises in part from interested motives; but when all the sources of it coalesce, it becomes as disinterested as any other affection, and may rise to such a height as to prevail over all other desires, interested or disinterested. Enthusiasm is a mistaken persuasion of any person that he is a peculiar favorite with God, and that he receives supernatural marks thereof. It is a degeneration of love. The fear of God arises from a view of the evils of life, the threatenings of scripture, the sense of guilt, the infinity of the divine attributes, from prayer, meditation and the like. When restrained within proper limits, it is awe and reverence; when excessive, or not duly regarded, it degenerates into superstition, or atheism. Superstition is a mistaken opinion concerning the severity and punishments of God, magnifying these in respect of ourselves or others. Atheism is speculative or practical. Speculative atheism denies the existence of God. Practical atheism is the neglect of God; thinking of him seldom and with reluctance; disregarding him in actions, though not denying him in words. Both kinds may be supposed often to proceed from a sense of guilt, and consequent fear of God, producing aversion to him.

6. The pleasures and pains of the moral sense, excited by the contemplation of moral beauty and deformity.—The moral sense is the disinterested approbation of piety, benevolence, and self-government in ourselves and others, and the correspondent disapprobation of vice. It is the result of education and mental discipline; it leads to the pure love of God and the practice of universal virtue.—Scrupulosity is a degeneration of the moral sense, which arises from a consciousness of guilt, and an erroneous method of reasoning.

NATURAL PHENOMENA.

LUNAR RAINBOW.

THIS iris lunaris being so rarely seen, that Dr. Plot tells us, that several learned and observing men, never saw one in their lives, and that Aristotle himself observed only two in above fifty years; the ensuing account, which I had from a gentleman of great veracity and ingenuity, will be the more acceptable.

He was lately in Derbyshire, where, on Christmas last, at Chapwell Hall, and walking towards Patterson Green, about eight o'clock in the evening, he observed, with great satisfaction, the bow, which the moon had fixed in the clouds; she had then passed her full about twenty four hours; the evening had been rainy, but the clouds were dispersed, and the moon shone pretty clear. The iris was more remarkable than that which Dr. Plot observed at Oxford, the 23d of November, 1675; that being only of a white color, but this had all the colors of the solar iris, exceedingly beautiful and distinct, only faint in comparison with those we see in the day; as must necessarily be the case, both from the different beams that cause it, and the dispositions of the medium. What puzzled him the most, was the largeness of the arc, which was not much less than that of the sun, as the different dimensions of their bodies, and their respective distances from the earth seem to require; but as to its entireness and beauty of its color, it was surpassing. It continued about ten minutes, before the interposition of a cloud hindered his further observations.—[*Gal. of Nat. and Art.*

For the Family Lyceum.

MR. HOLBROOK—I stated to you in the course of the winter past, that I had a small school in my study; it consisted of young gentlemen and ladies almost entirely: and the object of this communication is to inform you, as a patron of Education, of the very great advantages we have derived from your School Apparatus and 'Easy Lessons in Geometry.' They have given an interest to my school, which I am confident it would have been wholly out of my power to have made them feel in any other way. At the same time I have enabled them by means of these to solve mathematical problems which I am very sure not one teacher of a common school in ten in this region can solve. The great value of this apparatus consists in its making very useful, and what have been considered very *intricate* branches, easy and pleasant. Certain I am that there must be a *great* revolution in our Common Schools, and I am determined to do all that in me lies to bring it about. Your apparatus I am going to exhibit wherever I can in our schools, and I have no idea that our children *must* always drag along in the way they have done. Years and years of the very best part of life are lost, and when for the time many ought to be teachers, we find them still unacquainted with the very first principles of education.—The subject is engrossing much of my feeling; and it seems to me sometimes that I could learn a school more—that is, give them more good ideas in one hour, than half of our schoolmasters give them in a whole winter.

Your 'Easy Lessons' are invaluable. They fill up a place that in common school education has always been left vacant. I could wish this little book were enlarged to double its present size—and I have no doubt you would do well to sell it as a separate thing from your apparatus. My youth who have finished their arithmetic have taken up this little work with great apparent pleasure—and I am bold to say they have got more knowledge of mensuration of cubes, and angles and surfaces, &c. in one week, than they would have obtained in a common school in a whole year. It is of supreme importance to learn youth to *think*; to *judge* for themselves, and not, as has been too much the case, treat them as mere passive receivers—machines to move only as they are acted upon.

I intend to proceed as soon as my health will permit (which is now poor) and form a Lyceum. If you could write and let me know the best manner of conducting this institution in a small parish, I should esteem it a favor. Something of this kind must be done, here and throughout our country; or after all our sabbath schools and benevolent institutions, our country is undone.—There are ten thousand causes in operation to corrupt the minds of the young—but if we can once turn their minds and get them interested in things useful, we may hope under God that we can resist and effectually counteract the demoralizing influence which is daily exerted on their minds. C. N.

AN ADDRESS delivered before the Teachers of Howard Sunday School, September, 1832. By a Teacher. Boston: B. H. Green, 1832.

We cheerfully respond to the views expressed in the following extract from the Essayist.

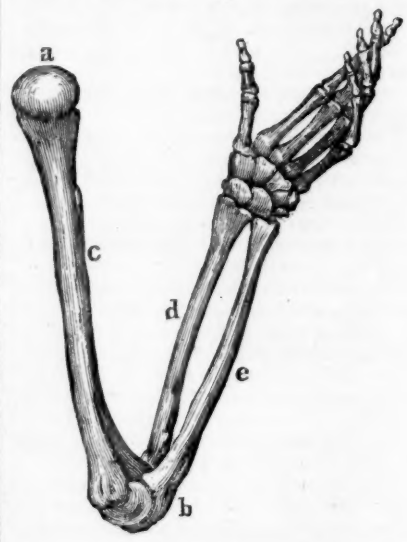
WE are happy in having an opportunity to speak of another production of the author of the address delivered before the Hancock Sunday School, which we noticed some time since. We allude to that indefatigable laborer in the cause of christian benevolence, Mr. Frederick T. Gray.

This address has the appearance of being written in haste, and put to press without the revision of the author, as there are a number of small errors, and faults in the construction of sentences, which doubtless he would otherwise have corrected: but good judgment is perceptible in the arrangement, and, on the whole, it may be said to be well written. Mr. Gray is at present, however, more of a MAN than a writer; he is a *doer* more than a speaker of the word.—He is a well-informed, warm-heated, zealous and devoted friend of humanity. Extensive business pursuits, and active benevolent duties, have hitherto prevented his devoting particular attention to literary acquisitions; but he has shown considerable talent even in this department, and we are glad to learn that he is about to commence a regular course of study where he will be free from the disadvantages which have to this time attended his course.

To one who feels in any degree as Mr. Gray feels, the production before us must abound with interest. In it is unfolded the heart of a faithful and devoted teacher; it contains the thoughts of an intelligent and studious teacher; it furnishes counsel and advice from an experienced and effectual teacher; and affords the strongest encouragement to seek the reward of him who lays aside every weight, and presses forward towards the mark for the prize of the high calling of every Sabbath School Teacher.

We hail with great satisfaction the placing of Mr. Gray at the head of the Young Men's Benevolent Society of this city. This event will afford both him and that praiseworthy association more ample opportunity for prosecuting their benevolent objects than they have heretofore possessed.

NATURAL THEOLOGY.



MOTHER. You have seen the bones of some animals, my son, have you not?

ROBERT. Oh! yes, mother, I have often seen them, when we have had meat, at dinner, or turkies and fowls. You know you sometimes give me the leg of a fowl, which you call the drumstick; but it looks only a very little like one.

M. Well, there are a great many bones in your arm and hand, and you can feel them, through the flesh, with your hand. Here is a drawing of the bones in your arm and hand.

You see, from the shoulder (a,) to the elbow (b,) there is only *one bone*; but, from the elbow to the wrist, there are *two bones*.

The bone (c,) is called the *shoulder-bone*. The bone (d,) which joins the wrist, on the side where the thumb is, is called the *radius*. The bone (e,) which joins the wrist, on the side where the little finger is, is called the *ulna*.

You must remember these names, Robert.

R. I will try mother; the *shoulder-bone*; —the *radius*;—the *ulna*.

M. I shall first explain to you, my son about *the joint of the arm, at the shoulder*.

R. What is a *joint*, mother? I know where the joints are; for I have joints in my thumb and fingers, so that I can bend and move them, a great many different ways. But the joint is covered with flesh, and I cannot see it. What is it like?

M. There are different kinds of joints in the body, my son. Some are something

like the *hinge of a door*, which may be called, *the joint of a door*; by the help of which, the door can be made to open and shut. You see it can move only *one* way, backwards and forwards.

The joints of your fingers, and the joints at your elbows, are *hinge-joints*.

By the help of them you can shut and open your fingers; and, if your elbow is leaning on a table, you can let your hand go down to the table, and raise it up again, so as to have it touch your shoulder. This joint, like the hinge on the door, can move only one way.

Go, and look at the hinge of the door. You will see, that one part of the hinge, which is fastened on to the door, fits into the other part of the hinge which is fastened on to the door-post, so as to move in it, and thus let the door move. These two parts of the hinge, moving the one in the other, may be called a *joint*, and they are fastened together by an iron pin, or piece of wire.

This iron pin passes through them, up and down, and keeps them together; so that there is no danger of the door's falling down, or getting out of its place.

In the same way, in our bodies, where there are joints, the end of one bone fits on to the end of another bone, and is fastened to it, (not with a pin, but) by something like very strong, tough threads, or cords; and, by something like a little bag, which goes all round the ends of the two bones; so that it helps, with the cords, to keep them firmly together, and they move easily, without any danger of getting out of their place. The ends of the bones do not quite touch each other. The end of each bone is covered with something softer than the bone, but not so soft as flesh. You sometimes see it on the bones of meat, at dinner, and it is called *gristle*. It is very tough and difficult to be broken, and is a little elastic, something like india-rubber.

This gristle keeps the hard bones from jarring, and rubbing against each other, which would be very unpleasant. Besides, without this gristle, the bones would not move so easily, and they would be likely to wear away, we use them so constantly, and so much.

You see, Robert, that God shows you, in the way in which He has made your arm and hand, His great wisdom, and power, and goodness.

Even *one single joint*, which I have been telling you about, shows the wonderful *design, and contrivance, and skill of God*.

R. It does, indeed, mother.

M. But, my son, there is something about a joint, which is yet more wonderful.

R. What is that, mother?

M. What do people have to do to the wheels of their wagons, after they have run some time, and begin to go hard and slow, and make a creaking, and unpleasant noise?

R. They have to grease them. And do you not remember, mother, that you put a little sweet oil into the *joint* of my knife, the other day, and how easy it made it open and shut. I could hardly open it, before.

M. Well, my son, there is something a little like sweet oil, only a great deal more smooth, which is constantly softening those parts of the joints which move against each other, and making them slippery, so that they move easily and pleasantly.

This *joint-oil* is made inside of the little elastic bag, which, I told you, goes all round the ends of the two bones, at the joint. The bag holds the oil, and keeps it from running out.

If there is disease in the joint, and this oil is not made, the join ,becomes stiff, and one bone creaks upon another, and feels very uncomfortable.

Now, God has made our joints so skilfully, and so well, that the joints of most persons go safely and pleasantly all their lives, and never get out of order.

And when we consider that there are about two hundred and fifty bones in our bodies, connected together by various joints; and how often we move most of these joints even *in one day*; and how many *millions, and millions, and millions, of times*, an old man has moved them, from the time that he was a little infant,—is it not wonderful, how *long and how well they last!*

What man could make a hinge of a door, or a wheel of a wagon, that would move so often, and wear so long, without having any thing done to it to keep it in order!

We have often to grease the wheels of our wagons, and, sometimes, to put in new spokes, and get new wheels made; and we have to oil the hinges of our doors, and, sometimes, the screws work out, and the hinges grow loose, and we have to put them in order, or get new ones.

But we take no care of our joints. We hardly ever think about them God has made them *to keep* on going well; and, in doing this, what wonderful design, and contrivance, and skill He has shown!

R. Mother, I am sure, that *one joint is enough to make any body believe that there is a God*, and that He made our bodies and souls.—[*Gallaudett.*

METEOROLOGICAL DIARY, FEB'RY. 1833.

Observations taken at 8 A. M.; 2 & 6 P. M.

Date.	Av'ge.	Thm'er.			WINDS.			Weather.
1	56	56	62	50	NW	NE	E	Clear.
2	64	60	68	64	SW	SE	"	Cloudy—rainy.
3	59	56	64	56	NW	"	SW	Clear.
4	55	48	60	58	NE	"	SE	Clear.
5	49	40	58	50	SE	NE	"	Cloudy.
6	64	54	70	68	SW	"	"	Clear.
7	49	42	57	48	"	"	"	Clear.
8	42	38	50	38	NW	NE	SE	Clear.
9	55	44	60	52	SW	"	"	Clear.
10	60	56	64	60	SW	"	SE	Clear.
11	62	60	63	57	SW	SE	"	Cloudy.
12	64	60	71	60	SE	"	"	Clear.
13	69	62	76	70	SW	"	"	Cloudy.
14	54	52	58	52	NW	NE	"	Cloudy.
15	63	60	66	56	SW	NW	"	Clear.
16	54	52	60	51	NE	"	"	Clear.
17	65	50	77	69	NE	SE	"	Cloudy.
18	73	68	76	74	SW	SE	"	Cloudy.
19	73	70	78	71	SSE	SW	NW	Cloudy.
20	65	66	68	62	NE	"	"	Cloudy—rain.
21	57	58	60	54	NW	"	"	Clear.
22	46	52	60	56	NNE	NE	"	Cloudy.
23	58	51	62	58	NE	"	"	Cloudy—rain.
24	63	60	66	62	SW	"	"	Cloudy—rain.
25	44	40	48	44	NW	"	NE	Clear.
26	53	42	60	58	NE	"	"	Cloudy—rain.
27	63	57	70	61	NW	S	"	Showery.
28	67	60	72	68	SE	"	"	Clear.

REMARKS FOR FEBRUARY 1832.

1. These observations have been taken three times a day, viz. at 8 A. M.; 2 and 6 P. M.

2. Mean of three daily observation for the month 59°; 3° warmer than January. Max. 73° on the 18th and 19th. Min. 42° on the 8th.

3. Ther. Ex. at 8 o'clock, A. M. Max. 70° on the 19th. Min. 38° on the 8th. Mean 55°.

4. Ther. Ex. at 2 o'clock, P. M. Max. 78° on the 19th. Min. 48° on the 25th. Mean 65°.

5. Ther. Ex. at 6 o'clock, P. M. Max. 71° on the 19th. Min. 38° on the 8th. Mean 59°.

6. There have been 6 rains during the month, viz. on the 2d, 20th, 23d, 24th, 26th and 27th. Very little rain has fallen for February. Two weeks in succession without any rain.

7. Winds have been N. W. 5 days; N. N. E. 9 days; S. E. 7 days; S. W. 7 days. The weather has been decidedly clear 14 days, variable 6, cloudy 8.

8. February has been unusually pleasant. The health of Savannah continues to be good.

Chatham Academy. W. H W.

Teachers' Meeting.

The objects, plans, and operations of the School Agent Society, and of the meeting of Teachers at Andover, on Wednesday next, can be fully learnt by any friends of education who will meet at the Columbian Hall on Tuesday, at 10 o'clock, A. M. and at 3, P. M.

They can also have an opportunity to witness an explanation of the Family and School Apparatus, and some of the elementary specimens in Geology, with a view to Family and School Cabinets.

Young Men's Benevolent Society.

We have omitted too long to notice an Address delivered before the Society above-named. It is truly an excellent address both in letter and in spirit. The views presented in it are purely benevolent—they are benevolence put into practice—benevolence of the heart, not of the head—in deed, not in word—in life, not in the closet—the sum and substance of life, not an occasional act—of the whole world, not of a few individuals.

We understand that this praiseworthy effort was by Mr. Henry T. Tuckerman, who, though scarce twenty years old, sets a worthy example in his life for the imitation of thousands of three times as many years.

One Cent and the American Union.

In the United States are about four million of children. One cent from each of these might procure a copy of Hall's Lectures on School Keeping, as a present to every teacher in the Union. That would improve them by enlightening their minds, and still more by enlarging their hearts.

One cent a week each, or fifty cents a year, would amount to two million of dollars. That would furnish a set of Apparatus and a Juvenile Library to each of the fifty thousand schools in the Union. The apparatus and books would have a direct influence upon every child, and an indirect influence upon most of the parents, and many other friends of the children composing these schools.

Who can doubt that this measure may be adopted to a great extent without difficulty? and if adopted, who will doubt its acting as a powerful, if not an indissoluble cement of the American Union?

Query. Would it not be well for every parent, teacher, and child, who thinks the experiment a good one, to unite their aid to try it?

Little Philosopher.—The work under the above title, designed to lead children to think and reason about *common things*, is already extensively known to American teachers and parents. Our present object is to call attention to a revised edition, considerably improved on the original plan, by the author, Rev. Jacob Abbott. An important feature of this work, especially of the present edition, is the natural order and arrangement of the subjects; or an order coinciding with the natural progress of the infantile and juvenile mind.

The first subject presented, is *shape*, or the forms and figures of objects which are most commonly presented to the minds of children. Then comes color, hardness, weight, light, &c.

We have many times suggested the fact, that the form of objects occupied more of the early attention of children, than any thing else, and of course that it is *natural* and proper to give them aid in that, as one of the first facilities in educating children.

Connected with *observing* the shape of different objects or figures, is forming them upon slates, or cutting them from paper, which is also presented to the attention of parents and teachers, and particularly to the *practise* of children, both at home and at school.

We are sure it would be *economy*, not merely for the fifty thousand schools, but for the two million of families in the United States, each to secure a copy of this work.

ASTRONOMY.

The Solar System.

In our last, we mentioned six classes of bodies constituting the solar system, and named several of the bodies belonging to these classes. We also referred to a law which regulates them and all other bodies, and every particle of matter in the universe.

As the elementary principles and the elementary operations regulating the heavens are highly deserving of our familiar acquaintance, both on account of their simplicity and grandeur, and their connection with all parts of the science, we will now present two of them distinctly. They are *gravitation* and *motion*. Both of these have inherent in them an impulse or a power which separately and combined produce the most sublime and the most important operations in the physical universe. It is by these two forces, gravitation and motion, that the planets move in circular orbits round the sun, and the moons in similar orbits round the planets. By the force of gravitation exerted by the sun upon the planets, they are kept from moving directly forward in straight lines, which they and all moving bodies must do unless some other force turns them from their course. On the other hand, if no other force but that of gravitation of the sun acted upon the planets, they must of course move directly to the sun, and thus lose their circular or eliptical orbits.—But when both are combined, the power of gravitation exerted by the sun to keep them from flying off in tangents, and the power of motion urging them towards straight lines, they produce the grandeur, the beauty, and the harmony which is preserved in the heavens and felt upon earth from year to year and from century to century.

It is not easy to see at a glance the power or the results of these two simple principles of nature, gravitation and motion, either in the heavens or upon the earth. They invite and demand a long and critical examination. Although simple, they are still universal; acting upon every particle of matter in the universe at all times, but with numerous and varied results. There is no time and no relation in which we are not effected by them. The whole universe is in motion, (some of it in commotion); every particle of matter in the universe attracts and is attracted by all the rest. It is moved and moves all the rest. How mighty, how sublime, how glorious, the results of these two elementary principles of nature! Without them the universe would be one vast chaos; one eternal monotony. Select a single motion, and look at its results—the diurnal motion of the earth on its axis. Suppose that the earth suffered an eternal rest; why then a portion of it would suffer eternal night and winter; and another portion be eternally and constantly exposed to the scorching rays of the sun, and our whole globe, now so beautiful and useful, would be but one useless mass of matter; one universal gloom, uninhabited and uninhabitable.

But the diurnal motion of the earth is but one motion of one body. Each of the other planets, and every moon of each, has a similar motion, and probably with similar results. While the earth and every other planet is turning upon its axis, it is also moving forward in an annual journey. And while each moon has a rolling motion like the planets, it also has a forward motion round its planet, and another motion with the planet around the sun. It is also supposed that the sun has two motions, one on its axis, which it completes in twenty-five days, and another through the heavens, taking with it all its planets, moons, asteroids, comets, and constantly warming and enlightening them in their course.

How beautiful, how harmonious, and how sublime, are these great and complicated motions of the solar system.

While the water-drop is trickling down the ledge, or the mighty cataract tumbling down the mountain precipice, the mountain itself, as a small part of our planet earth, in the hand of its Maker, is whirling upon its axis, with immensely greater rapidity than human effort can give to a top constructed as the toy of a child.

Nor is this all, or but a single and small motion in this mighty machine. While the earth, with all its furniture of mountains, oceans, rivers, plains, and forests, is taking an annual revolution, to furnish each part of it with a proper portion of light and heat from a common fountain, the moon, its constant and faithful attendant, never loiters or lingers in his monthly tour round its parent.

The same, and even more, with other planets and other moons. Jupiter, though more than a thousand times as large as our globe, performs a daily motion in less than ten hours, and is at the same time moving onward, and constantly on in its annual course. This planet has four attendants or moons, constantly wending their way around it, though in different times and with different velocities.

Other planets, other motions, and other phenomena, will be presented and explained in future numbers.

School Apparatus.

The letter from our correspondent on the subject of apparatus, is a fair specimen of the general expression of teachers and others, who have become acquainted with its results. In not less than forty or fifty conventions of teachers the use of apparatus has been unanimously recommended, not merely as an aid in communicating knowledge and exercising mind, but for its economy—the saving of expense in the business of instruction. Indeed, there seems to be but one opinion on the subject of its importance; the only question is how it can be furnished to all our schools.

Among the different modes hitherto adopted to procure apparatus for schools, the contribution of a few cents by each of the pupils in a school, has been the most happy in its results. Besides an equal and even greater advantage by this, than any other mode in the means of exercising the intellect, it never fails to open the hearts of children.

After they have given a few cents for aiding each other by the instruments of instruction they procure, they are are almost of course, desirous of giving for other objects.

One great advantage of this mode, is, that it is feasible in almost every school. It only needs to be proposed by the teacher, to have it acceded to by the children, and in most cases by the parents.

Wood Cuts.—As the object of the cuts used in the Lyceum is to illustrate principles of science, and not merely to please the eye with pictures, and as the object of the Lyceum is to carry on elementary and systematic treatises on various sciences, and not to make it up of miscellaneous and unconnected scraps of science, we shall find it necessary in some instances to use the same cut in several papers. Under these views, our readers will not consider it a mere repetition of the same matter.

BOOK OF NATURE.

THE SUN.

'Great source of day! best image here below
Of thy Creator, ever pouring wide,
From world to world, the vital ocean round,
On nature write with every beam HIS praise.'

From the earth and its companion the moon we will now direct our attention to yonder radiant orb, which fills the heavens with his rays, and cheers the earth with his presence. The *sun* is, indeed, a most glorious luminary, and is, without doubt, the most perfect image of his great Creator that we can behold among inanimate beings; and indeed so nigh in one respect does he resemble his Maker, that of the Sun it may be said, that he also is

'Too glorious to be gazed on in its sphere.'

It is no wonder, then, that the fallen reason of idolatrous nations 'should mistake so fair a copy for the adorable original,' and that philosophers should be divided so much in their opinions respecting his substance. In one thing, however, even from the imperfect glance we have been able to procure of this glorious body, it is found to differ from, and to fall infinitely shorter of its Creator, for *the sun has its spots*, while HE who made the Sun, is

——'Light itself,
Pure, spotless, uncreated light, ineffable.'

According to Dr. Gregory, 'the sun is very generally considered as composed of the matter of light and heat, whether these are to be regarded essentially the same or not;' but he is careful how he expresses himself even in this cautious manner of declaring his sentiments, for he adds, 'perhaps it will be speaking more correctly, to say, that he is the *source of both*, and that he both warms and enlightens the bodies that surround him.' The sun is indeed the great fountain of light and heat, and it is amazing to think with what rapidity of motion he sends forth his rays to illumine and cherish the world: for so great is the distance of this bright body from us, that, were the motion of light no swifter than a cannon ball, it would take, according to the computation of philosophers, thirty-two years in arriving at the earth; and were it no swifter than sound, it would take upwards of seventeen years; but light flies with such incredible velocity that it arrives at the earth in about seven or eight minutes, being at the rate of no less than 200,000 English miles in a second of time. By this means the inconvenience that would result from a slower progress of light is obviated, and the kindly effects of this inestimable and indispensable blessing are conveyed to us in an instant.

The rays of the sun are not sparingly dispensed, nor come to us as from a niggardly hand. The rays of light are copiously diffused, and in sufficient abundance to chase away the most minute vestige of the shades of night. The *extension* of light is a most valuable property of that great and invaluable blessing, for it is by it that we are enabled to see bodies at a distance during the day, and by the same operating cause, the mariner, during the hours of darkness, observes the *fiery beacon* glimmering from afar.

The *heat* of the sun is also most potent in its operations. With ease it penetrates into the bowels of the earth, and finds its way into the most secret recesses of nature; so that, in the expressive language of Scripture, 'there is nothing hid from the heat thereof.' But, indeed, what could possibly exist without it? The Sun may be truly styled the grand enlivening principle of the universe; without his influence the crimson tide behoved to stagnate in the veins of animated beings; 'the trees could never break forth into leaves, nor plants spring up into flowers;' we would no more behold the meadows mantled over with green, nor the valleys standing thick with corn; or, to speak in the beautiful language of a prophet, 'no longer would the fig-tree blossom, nor fruit be in the vine; the labor of the olive would fail, and the fields could yield no meat; the flocks must be cut off from the fold, and there would be no herd in the stall.' It penetrates the beds of metal, and finds its way to the place of sapphires. In short, the beneficial agency of this magnificent luminary is inexpressible.

The sun is also the fountain of cheerfulness. While all nature is enlightened by his presence, it is also cheered by its gifts. 'Truly (says Solomon) the light is sweet, and a pleasant thing it is for the eyes to behold the sun.' And the author of 'The Spectator' has well observed, that the sun has a particular influence on the mind of man and making the heart glad, for a proof of which he refers us to a consideration of the natural world, when this luminous globe withdraws his rays for a few moments by an eclipse.

The human mind delights in variety, and one great cause that produces cheerfulness in the heart of man, as he walks abroad and contemplates the face of nature, is no doubt that diversity of light and shade, of color and hue, that in every direction salutes his eye. In this respect, also, the sun may be said to be the fountain of cheerfulness, as it is certainly the cause of color! The sun is the great limner of nature, whose beautifying rays paint creation. 'The blushing beauties of the rose, the modest blue of the violet, (as Goldsmith observes,) are not in the flowers themselves, but in the light that adorns them. Odor, softness, and beauty of figure are their own; but it is *light* alone that dresses them up in those robes which shame the monarch's glory.'

The sun may, therefore, also be well styled the fountain of color; and, but for this, what disadvantages would we labor under, notwithstanding the beneficial distribution of light and heat. In that case, we would not only be unable to distinguish objects at a distance, and to perceive the color of the raiment of our nearest friends, but be incapable of observing any difference of complexion betwixt the ink that flows from our pen, and the paper on which we write: without this discriminating property of light, no pleasing variety would overspread the great carpet of nature; the same unvaried hue, in every direction, would meet our eye; the same dull uniformity would every where prevail.

Such are some of the beneficial consequences that result from the Sun, with respect to the earth. We shall in our next consider him in another and a more exalted light, as the centre of the Solar System.

A MILLION OF FACTS,

BY SIR RICHARD PHILIPS.

'AMONG the clever books recently received from London, is one with the above title, containing a vast variety of information in a small space. It will possibly be reprinted in America, but as that is yet problematical, we offer a few extracts from it, which will serve to exhibit its character, while they convey some useful information.

'The sea is to the land, in round millions of square miles, as 40 to 10, or as 4 to 1.

Fraimlofer, in his optical experiments, made a machine in which he could draw 32,000 lines in an inch breadth.

There are 7,700 veins in an inch of colored mother of pearl. Iris ornaments of all colors are made by lines of steel from 200 to the 1,000th part of an inch.

The coal mines, which in Staffordshire have been burning for 200 years, consist of pyrites, subject to spontaneous combustion. Water will not extinguish them, because when drawn off, the pyrites burn more than before.

Botanists record 56,000 species of various plants, and 38,000 are to be found in the catalogues.

The height of mountains in the moon is considerable; ten are 5 miles, or nearly; and 8 are from 3 to 4 miles. Three of the hollows are from 2 to 3 miles, and as many are nearly 2 miles.

Teeth are phosphate of lime and cartilage, but the enamel is without cartilage.

The muscles of the human jaw exert a force of 534lb. and those of mastiffs, wolves, &c. far more. The force is produced by the swelling of the muscles in the middle and dilating again.

A man is taller in the morning than at night to the extent of half an inch or more; owing to the relaxation of the cartilages.

The sense of feeling is created by the papillæ of the skin, consising of small white nervous fibres, which erect themselves when the sense of touch is excited.—[*Oxford Lyc.*

METEOROLOGY.

METEORIC STONES.

Almost all the larger fire-balls have been observed to disappear with a loud explosion; and it was almost constantly affirmed that heavy stony bodies fell from them.

But though several well-authenticated accounts of the fall of such stones had been from time to time published, little credit was given to them by philosophers, till Dr. Chladni published a dissertation on the subject in 1794. Two years after, Mr. King published a still more complete collection of examples, many of them supported by such evidence that it was impossible to reject it. Mr. Howard having procured specimens of the stones which were said to have fallen in different places, compared them together, and subjected them to a chemical analysis. The result was, that all these stony bodies differ completely from every other known stone; that they all resemble each other; and that they are all composed of the same ingredients. They are found entirely different from all known stones, and exactly resemble each other, even in their component parts. They are heated and luminous when they reach the earth: the force of their descent buries them some depth into it; and they have been seen under these circumstances in Italy, Germany, France, England and India. The meteors either really do, or appear to, move horizontally, and are said to descend ere they explode. The stones are of different sizes, and from a few ounces in weight to several tons; they are generally circular, and invariably covered with a rough black crust, which according to Howard, is principally composed of oxide of iron. The stones which fell at Laigle, in France, in 1803, yielded by the analysis of Vauquelin and Fourcroy 54 parts silica, 36 oxide of iron, 19 magnesia, 5 oxide of nickel, 2 sulphur, and 1 lime;—and Mr. Howard found that 150 grains of a meteoric stone which fell in Yorkshire contained 75 silica, 37 magnesia, 48 oxide of iron, 2 oxide of nickel. The oxidizement of the metallic bodies caused this increase of weight.

Various conjectures have been formed as to the origin of these stones; some, with Laplace, supposing them to be ejected by volcanoes in the moon; and others, with Sir W. Hamilton and Mr. King, that they are concretions formed in the atmosphere.

Mr. Leslie is of opinion that they are fragments thrown off from the recently discovered planets, and precipitated to the earth by discharges of the electric fluid.—[*First Lines of Science.*

THE ARTS.

CUTTING GLASS.

THE art of cutting glass is a much more modern invention than that of painting and staining it, which has been described.

It is generally believed, that Caspar Lehmann, originally a cutter of iron and steel in the service of the emperor Rudolphus II, was the first person who attempted this mode of embellishing the material. It was about the year 1609, when, having procured from the emperor an exclusive patent for using the art, together with the appointment of lapidary and glass-cutter to the court, Lehmann prosecuted his invention with much success in the city of Prague.

Before that time, many artists had engraved figures upon glass by means of the diamond, and their labors were greatly admired. Some glaziers had also discovered a mode of cutting glass by the employment of emery powder, and sharp pointed instruments of hardened steel, as well as with heated irons; but these methods were greatly different in the manner of their performance, as well as inferior in their effect, to Lehmann's process, by which they were consequently, for the most part, superseded. It was, however, very long after the period already mentioned, that the art attained to any thing like the degree of perfection which it now exhibits.

At the end of the seventeenth century, glass-cutting was prosecuted to a great extent, and in a very improved style, at Nuremburg; the artists of that place having much simplified the tools employed, as well as the methods used for their employment.

In the present advanced state of the art, the glass utensils and ornaments which contribute so greatly to the embellishment of our tables and saloons, owe much of their richness and brilliancy to the elaborate manner in which they are cut. This mode of ornamenting glass, although it does not indeed offer any field for exercising the higher faculties of genius and invention, yet calls for a considerable degree of taste in the arrangement of forms and figures.

The implements employed by the glass-cutter, although, owing to the great variety of the work which he has to execute, they are of necessity numerous, yet partake of the simplicity observable throughout the various processes of the manufacture.

In some principal establishments, steam power is used for giving motion to a shaft which causes the revolution of numerous large wheels or drums fixed thereon, and each of these being connected by a band with a pulley on the axle of a smaller wheel, occasions the latter to revolve with great celerity; these small wheels are the cutting instruments. The occupation is frequently carried on in the appartment of an individual workman, and in this case, only one large wheel, similarly connected with the axle of one of smaller diameter, is turned by means of a winch, a boy being employed for that purpose. In all other respects the process is identical, whether prosecuted in the attic of the artizan, or in the spacious factory of the manufacturer.

The small wheels are so arranged, that each can be unfixed without difficulty, and another substituted of a form better suited to the work in hand, or of a material more adapted to the stage of the process.

As regards their forms, these cutting wheels are either narrow or broad—flat-edged—mitre-edged, that is, with two faces forming a sharp angle at their point of meeting—convex or concave. In fact, so various are the wants of the workman, that as many as forty or fifty wheels having differently shaped edges, are found in the shop.

The materials employed in the formation of these cutting implements are, iron, both cast and wrought; Yorkshire stone; and willow wood. Wrought iron is, indeed, only used for cutters of the narrowest dimensions, and which it would therefore not be possible to make sufficiently tough of cast metal. Iron wheels are used only for the first or roughest part of the operation, and their employment is even dispensed with altogether, where it is intended that the pattern shall be at all minute; as the metal and the sand, which must be used in conjunction with it, would act too roughly, and frequently chip away portions of the glass. For such minute works, and for smoothing down the asperities which will always be occasioned where iron cutters have been applied, a wheel of Yorkshire stone, moistened with water, must be used. The further smoothing and subsequent polishing of the cut surfaces are effected with wooden wheels: for the first of these objects, the edge is dressed with either pumice-stone or rotten stone; and for imparting the high degree of polish that is requisite for properly finishing the process, putty-powder is employed.

Beneath each one of the cutting wheels, a small cistern is fixed to receive the sand, water, or powder which has been used; and over the wheel, a small keg or a conical vessel is placed, the cock or opening at the bottom of which is so situated and regulated, as that the requisite quantity of moisture will be imparted from it to the wheel. The vessel which is placed over the iron wheel is furnished with fine sand, and into this water is admitted in such quantity as will insure the constant delivery of the moistened sand upon the face of the wheel in such proportion as the workman finds most desirable. The emery powder, rotten stone, or putty-powder, are applied from time to time as required by the workman, on the edge of the smoothing or polishing wheel. —[*Cabinet Cyclopædia.*

QUESTIONS

ON LYCEUM NO. 33.

Have volcanoes been discovered in any other body belonging to the solar system except the earth?

If they have, in what body, when, and by whom?

How has the twinkling of the stars been explained?

What is the common opinion among astronomers respecting the uses of the fixed stars?

Is it supposed that others exist, than those visible to us?

What is the object of the science of hydraulics?

With what force is water discharged from a hole in the bottom of a vessel?

What effect has the 'Scientific Tract' on Geology been found to produce on schools?

How has the science of Geology been rendered useful to clergymen and other students, or sedentary men?

What effect has Geology been found to have upon other studies, and upon the minds of children generally when introduced into schools?

Has any progress been made in *Comparative Meteorology* since it was first proposed in the Family Lyceum?

What are some of the comparative views which may be taken of the weather, winds, temperature, &c?

Into how many general divisions is the universe divided by astronomers, and what?

About which of these divisions have we the most knowledge?

What bodies compose the solar system?

How many planets are there, and what are their names?

Which of the planets have moons, and how many belonging to each?

Which planets move with the greatest velocity, those nearest the sun, or those most distant?

What simple law of nature regulates the motions of the planets, also of the moons and all other bodies in the solar system?

Which planet has the longest year, and which the shortest?

How many planets have longer years than the earth, and how many shorter?

What has been done by a school Lyceum in Boston towards advancing science, and benefitting the community?

How many Geological specimens were labelled, put up, and sent away by one school Lyceum in the course of a few days?

If each of the fifty thousand schools in the Union should collect and exchange specimens, how soon could a National Cabinet be procured?

Which is most easily comprehended by young children, geography or arithmetic? Which comes most frequently into use in conversation?

What have the pupils in the school for the blind learnt in six months?

Is there any hope that this school will benefit common education?

What object is recommended by the National Lyceum for general cooperation among the friends of education in all parts of the country?

How can delegates who attend the next anniversary of the American Lyceum. aid in the object thus recommended?

What progress is made towards furnishing cabinets of Natural History for towns and villages throughout the country?

How can school Lyceums aid this object?

What two kinds of faculties are essential to a moral being, and to a truly elevated character?

What is the danger from a man's being subject to his passion, without the direction of intellect?